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IMPORTANT NOTICE: Breastfeeding is best. Neocate® JUNIOR is a Food for Special Medical Purpose and must be used under medical supervision. Refer to label for details.



# CASE STUDIES: Neocate® JUNIOR



# Neocate® JUNIOR

## Case Study Booklet

**This booklet contains case studies illustrating the use of Neocate® JUNIOR in clinical practice.**

Nutricia would like to thank the five specialist paediatric dietitians for sharing their case studies, which provide real-life clinical insight into the nutritional assessment and management of food allergy disease in children aged 1-year and over. Please note that the case studies feature pseudo names in order to protect the identities of the children and their families.

Since its launch in the 1980s the Neocate® range has developed along with our understanding of food allergies and other complex gastrointestinal diseases.

Its successful use in multiple conditions in infancy has led to the development of an age-adapted range to meet the needs of growing children (from birth to 10-years of age). Neocate® now consists of a range of products for both infants and older children.

**Neocate® JUNIOR is a hypoallergenic, nutritionally complete, amino-acid based formula, for the dietary management of cow's milk allergy (CMA), multiple food allergy (MFA) and other indications where an amino acid formula is recommended.**

- ✓ Suitable as **sole source** of nutrition and as a **supplement** to an elimination diet
- ✓ **Great taste**, available in popular **flavour variants**; neutral, strawberry and vanilla
- ✓ **Dilution is adjustable** to the patient needs, able to be prepared at 0.69, 1 and 1.26kcal/ml
- ✓ Can be used as an **oral** or **tube feed**



Neocate® JUNIOR is a Food for Special Medical Purposes to be used under medical supervision.



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# FOREWORD

**Rachel De Boer**

Paediatric Allergy Dietitian

Many studies show children with multiple food allergies (MFA), particularly those with cow's milk allergy (CMA) are at higher risk of poor growth (particularly height growth or stunting) and nutritionally deficient diets;<sup>1-4</sup> this is particularly true of older children ( $\geq 1$  year of age), who remain allergic to cow's milk and other foods.<sup>1</sup> Factors that increase risk of nutritional deficiencies (particularly energy, protein, calcium, riboflavin, vitamin D and iron) and poor growth in older allergic children are:

- **MFAs, particularly persistent CMA.** The greater the number of restrictions, the more limited food options available and the more extensive the elimination diet. Nutrition counseling is necessary to educate families on appropriate substitute foods (i.e. foods that provide similar macro and micronutrients to those which must be avoided) and how often to offer these foods. A highly restrictive diet with poor substitution is likely to lead to poor dietary variety and quality, ultimately impacting on nutritional status.
- **Feeding difficulties.** Children with food allergies are more likely to experience feeding problems such as, food aversion, food refusal, food neophobia, and anxiety about eating in general.<sup>4</sup> This can lead to prolonged weaning, an age inappropriate diet and highly selective eating, all of which can lead to inadequate nutrient intake and impact on growth.<sup>4</sup>
- The presence of other **atopic co-morbidities** such as atopic dermatitis, asthma and chronic gastrointestinal inflammation have been shown to affect growth.<sup>4</sup>

In light of this, and due to the complex nature of multiple dietary restrictions, it is recommended that all older children with MFA are assessed by a Paediatric Dietitian who can offer advice on appropriate alternatives, necessary supplementation and monitor growth.<sup>3</sup>

In children with complex MFA on extensive elimination diets, particularly those with risk factors for nutritional deficiencies and poor growth, the use of an age-appropriate amino acid formula may be helpful to help achieve a child's nutritional requirements and ensure optimal growth and development.

This booklet provides a range of cases, written by healthcare professionals from different countries, who have found Neocate® JUNIOR to be effective in the nutritional management in this group of children.

## References

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4. Mehta H, Groetch M, Wang J. Growth and Nutritional Concerns in Children with Food Allergy. *Curr Opin Allergy Clin Immunol.* 2013;13(3):275-279.

# CASE STUDY: JOSIE



## Fussy and atopic 13-month old girl with faltering growth

**Rachel De Boer**  
Paediatric Allergy Dietitian

### Clinical Presentation

Josie is a 13-month old girl with moderate-to-severe, early-onset atopic dermatitis (AD), multiple food allergies (MFA), a history of faltering growth and feeding difficulties. She was successfully switched from an infant amino acid formula (AAF) onto a follow-on AAF (for >1 year of age), Neocate® JUNIOR, which was used as a supplement to an elimination diet, with the aim of optimising her nutritional intake and promoting catch-up growth.

### Background

Josie was born term and comes from an atopic family. She developed widespread eczema at 3-months, which became progressively worse over time. She was exclusively breastfed until solids were introduced at 5-months. She developed an urticarial rash and vomiting after eating porridge containing cow's milk at 6-months. The family sought the advice of a Paediatric Allergist, who conducted skin prick testing and diagnosed an IgE-mediated cow's milk allergy (CMA).

She was also highly sensitised to soya, wheat, egg, peanut and multiple tree-nuts. Until further investigation, it was recommended that Josie avoid these foods when weaning and that mum remove cow's milk, soya and egg from her own diet; this led to a slight improvement of Josie's eczema however it remained moderate-to-severe.

### Management

Josie was initially assessed by a Dietitian at 8-months, having been diagnosed with faltering growth; her weight having fallen from 25th centile to 0.4th-2nd centile, length from 25th to 2nd centile. She was struggling with weaning; reluctant to eat the majority of foods offered and was refusing to accept the spoon. Mum was keen to introduce a hypoallergenic formula as she was returning to work. In light of Josie's severe AD, MFA and faltering growth and in accordance with guidelines (including BSACI, DRACMA and ESPGHAN) she was prescribed an infant AAF. Practical guidance was given regarding the introduction of formula in addition to breastfeeding (e.g. reading and responding to feeding cues, offering expressed breast milk in the bottle initially and titrating in formula), allergen avoidance and food fortification (e.g. adding food sources of fat/protein to meals and snacks).

Four weeks later, after an initial struggle to introduce the infant AAF, she was now drinking up to 500ml/day (Table 1). Her weight had fallen to 0.4th centile and length remained on 2nd centile (Table 2). Due to her continued downwards growth trajectory, guidance was given to Josie's parents on how to concentrate the infant AAF to 19% weight/volume (0.95kcal/ml) (Table 1).

She was reviewed again at 13-months, her weight was 0.4th-2nd centile, length tracking 2nd centile and head circumference maintaining 50th centile (Table 2). She continued to be a highly selective eater; preferring finger foods and refusing most new foods. Her infant AAF intake had fallen to 360ml (see Table 1). **As a consequence of her suboptimal growth and diet, a switch from an infant AAF to the follow-on AAF, Neocate® JUNIOR, was recommended; the rationale being to increase nutrient provision through its preferential nutrient profile for >1 year of age and to optimise her intake with the improved taste.** Given her age, unflavoured Neocate® JUNIOR was recommended to help establish a healthy taste preference. However, it was explained that other flavours were available should they be required to improve acceptance and compliance. A target volume of 400ml/day (1kcal/ml concentration) was recommended (Table 1) with a view to monitoring Josie's growth and considering an increase in concentration to 1.26kcal/ml if necessary. Josie's mother was counselled on transitioning onto the new formula e.g. day 1 offer 25% Neocate® JUNIOR with 75% infant AAF, day 2 offering 50% Neocate® JUNIOR and 50% infant AAF and so on. It took 5 days in total for her transition onto the new formula. Further advice on her oral diet was also provided.

The transition onto Neocate® JUNIOR went well; one month later she was drinking 500ml/day (see Table 1). Her weight had increased from 2nd to 9th centile and length from 2nd to 9th centile and her parents reported that oral intake had improved slightly (Table 2).

**Table 1:** Nutritional management

|                                       | Formula (% weight/volume) | Volume (ml) | Energy (kcal/ml) | Energy (kcal/kg B wt) | Protein (g/kg B wt) |
|---------------------------------------|---------------------------|-------------|------------------|-----------------------|---------------------|
| <b>Review 1: Age 8 months Intake</b>  | Infant AAF (13,8%)        | 500ml       | 0.7kcal/ml       | 57kcal/kg B wt        | 1.5g/kg B wt        |
| <b>Recommendation</b>                 | Infant AAF (19%)          | 500ml       | 0.95kcal/ml      | 76kcal/kg B wt        | 2g/kg B wt          |
| <b>Review 2: Age 13 months Intake</b> | Infant AAF (19%)          | 360ml       | 0.95kcal/ml      | 49kcal/kg B wt        | 1.3g/kg B wt        |
| <b>Recommendation</b>                 | Neocate® JUNIOR (21%)     | 400ml       | 1kcal/ml         | 57kcal/kg B wt        | 1.7g/kg B wt        |
| <b>Review 3: Age 14 months Intake</b> | Neocate® JUNIOR (21%)     | 500ml       | 1kcal/ml         | 66kcal/kg B wt        | 1.86g/kg B wt       |

**Table 2:** Anthropometry

| Age                 | Weight (kg) | Weight centile | Height (cm) | Height centile | Head circumference (cm) | Head circumference centile |
|---------------------|-------------|----------------|-------------|----------------|-------------------------|----------------------------|
| <b>Birth (39+6)</b> | 3.1kg       | 25th           | 48.5cm      | 25th           | -                       | -                          |
| <b>8 months</b>     | 5.22kg      | 0.4th          | 63.7cm      | 2nd            | -                       | -                          |
| <b>9 months</b>     | 6.22kg      | 0.4th          | 66cm        | 2nd            | 43.5cm                  | 50th                       |
| <b>13 months</b>    | 7kg         | 0.4th -2nd     | 70.2cm      | 2nd            | 45.1cm                  | 50th                       |
| <b>14 months</b>    | 7.52kg      | 2nd -9th       | 71.5cm      | 2nd -9th       | -                       | -                          |

## Conclusion

In this case study, Neocate® JUNIOR, a 1kcal/ml follow-on AAF was successfully used in place of an infant AAF; resulting in increased volume and nutrient intake due to the product's improved palatability and improved macro and micronutrient intake to support and aid catch-up growth.

### Usage of Neocate® JUNIOR

- ✓ Oral supplement to an elimination diet
- ✓ Prepared at 1kcal/ml
- ✓ Unflavoured / neutral flavour variant

### Practical indicators for use of Neocate® JUNIOR

- ✓ Still allergic to cow's milk at 1-year of age and on an infant aaf
- ✓ Multiple food allergies
- ✓ Faltering growth
- ✓ Feeding difficulties
- ✓ Moderate-to-severe atopic dermatitis

# CASE STUDY: EMILY



## 18-month old girl refusing fortified milk alternatives

**Lydia Collins**

Paediatric Dietitian

### Clinical Presentation

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Emily is an 18-month old girl with non-IgE mediated cow's milk allergy (CMA) and multiple food protein allergies (MFA).

### Background

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Emily was first seen in the Paediatric Dietetic Clinic in December 2014 with a diagnosis of CMA. Emily was born 7-weeks premature and was exclusively breastfed for the first 5-months of life. She presented with symptoms while mum was breastfeeding which included, alternating between diarrhoea and constipation, vomiting, reflux, redness around her mouth and faltering growth. A thorough allergy history was taken as well as skin prick and specific IgE tests performed. Emily's results were negative to milk, confirming the diagnosis of non-IgE mediated CMA.

Mum then followed a maternal milk free diet however, symptoms persisted and Emily's weight remained static between the 2nd-9th centile. As Mum wanted to stop breastfeeding, Emily was commenced on Neocate® LCP with good effect.

Whilst still on Neocate® LCP, Emily commenced complementary feeding and started to develop new symptoms of hives around her mouth and swelling around her eyes. She was following a strict milk free diet, however started reacting to egg and wheat. Emily had further tests performed and was diagnosed with IgE and non-IgE mediated allergies to milk, egg, soya, wheat, strawberries, raspberries, blackberries and peaches. Due to concerns with her weight and nutritional status she was also commenced on Neocate® Spoon (an amino acid-based hypoallergenic semi-solid food containing essential vitamins and minerals) to aid in complementary feeding.

At 12-months of age Emily was growing well and her weight had improved to the 25th-50th centile. As she was receiving a varied diet, she was weaned off Neocate® LCP and advised to use oat milk with an additional vitamin supplement. The Milk Ladder\* was advised but as Emily reacted at the first step she remained on a strict milk free diet.

### Management

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Emily was seen for a routine follow-up in March 2016 at the age of 18 months. **Mum reported that Emily would not take alternative milks, such as oat milk, showing poor compliance as well as presenting with looser stools. She reported recent chest infections which had caused Emily's appetite to reduce and her diet to become restrictive.** Interestingly, she was still maintaining her weight between the 25th -50th centile.

There were concerns that Emily would not take an up-age amino acid formula as she had not taken Neocate® LCP for a while and was now used to a range of different tastes in her diet. Emily was started on Neocate® JUNIOR vanilla and strawberry flavours, as mum thought these would be the best accepted. Emily was started on a lower concentration (0.69kcal/ml) as she was maintaining her weight on the growth centiles, and so didn't require the nutrient density provided by the standard 1kcal/ml concentration.

\*Venter C, Brown T, Shah N, Walsh W, Fox A. THE MAP MILK LADDER. Clin Transl Allergy; 2014; DOI 10.1186/2045-7022-3-23

## 4-week review

Emily accepted the strawberry flavour particularly well and mum was also adding it to her cereal in the morning. She had no problems with compliance, taking 480ml per day. She no longer had issues with tolerance, and whilst her stools were previously a concern, they were now normal. Emily maintained her growth throughout the trial between the 25th -50th centile.

Mum reported that Emily was more settled on the formula and that her appetite had improved. She was pleased with her progress. Her diet was still restrictive and so Neocate® JUNIOR was continued to supplement her diet and help her meet her nutritional requirements.

## Three months later...

Emily had been reviewed by the consultant and had failed multiple food challenges and was advised to continue to take Neocate® JUNIOR as a supplement to her diet. Emily was also admitted onto the children's ward with tonsillitis. Mum reported

that Neocate® JUNIOR was one of the only things she would take while she was unwell, which had helped to maintain her weight and nutritional status during this time.

## Conclusion

The selection of flavours and good palatability of Neocate® JUNIOR made this product acceptable to Emily as an older child, and so aided in her compliance. The flexibility of providing Neocate® JUNIOR at a lower concentration (0.69kcal/ml) was also a benefit to Emily, as it provided adequate nutrition alongside her diet at a time when her growth was stable and tracking.

### Usage of Neocate® JUNIOR

- ✓ Oral supplement to an elimination diet
- ✓ Prepared at 0.69kcal/ml
- ✓ Vanilla and strawberry flavours

### Practical indicators for use of Neocate® JUNIOR

- ✓ Multiple food allergies
- ✓ Feeding difficulties



# CASE STUDY: FRANK



## 3.5-year old with Eosinophil Esophagitis to Cow's Milk and Soy

**Willeke Frank**  
Paediatric Dietitian

### Clinical Presentation

Frank initially presented at 18-months of age with failure to thrive (FTT), persistent regurgitation and high levels of eosinophils shown in blood tests secondary to suspected Eosinophil Esophagitis (EoE). Frank vomited multiple times daily. His appetite was good but his oral intake was limited by feeding difficulties: after a bite Frank spat food out and started playing with it.

### Background

Frank was born term at 40-weeks gestation, with a weight of 3240 grams. He was exclusively breastfed until 6-months of age, at which point he started solid foods. Soon after birth he started vomiting with associated suboptimal growth and ultimately FTT. Consequently, he was referred by his general practitioner to a paediatric allergist and paediatric

dietitian. Four-months later, he was referred to a paediatric gastroenterologist for endoscopy investigation. At this time endoscopy was performed (see Table 1). Based on the endoscopy result, Frank was diagnosed with EoE at 18-months of age.

**Table 1:** Endoscopy report

|                             |                                                                                                                                                   |
|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Macroscopically</b>      | Longitudinal folds which extend the entire length of oesophagus and oedema; suspect eosinophilic esophagitis (EoE).                               |
| <b>Oesophageal biopsies</b> | Many clusters of eosinophils in both biopsies, at two different levels, in keeping with EoE. More than 50 eosinophils per high power field (HPF). |

### Management

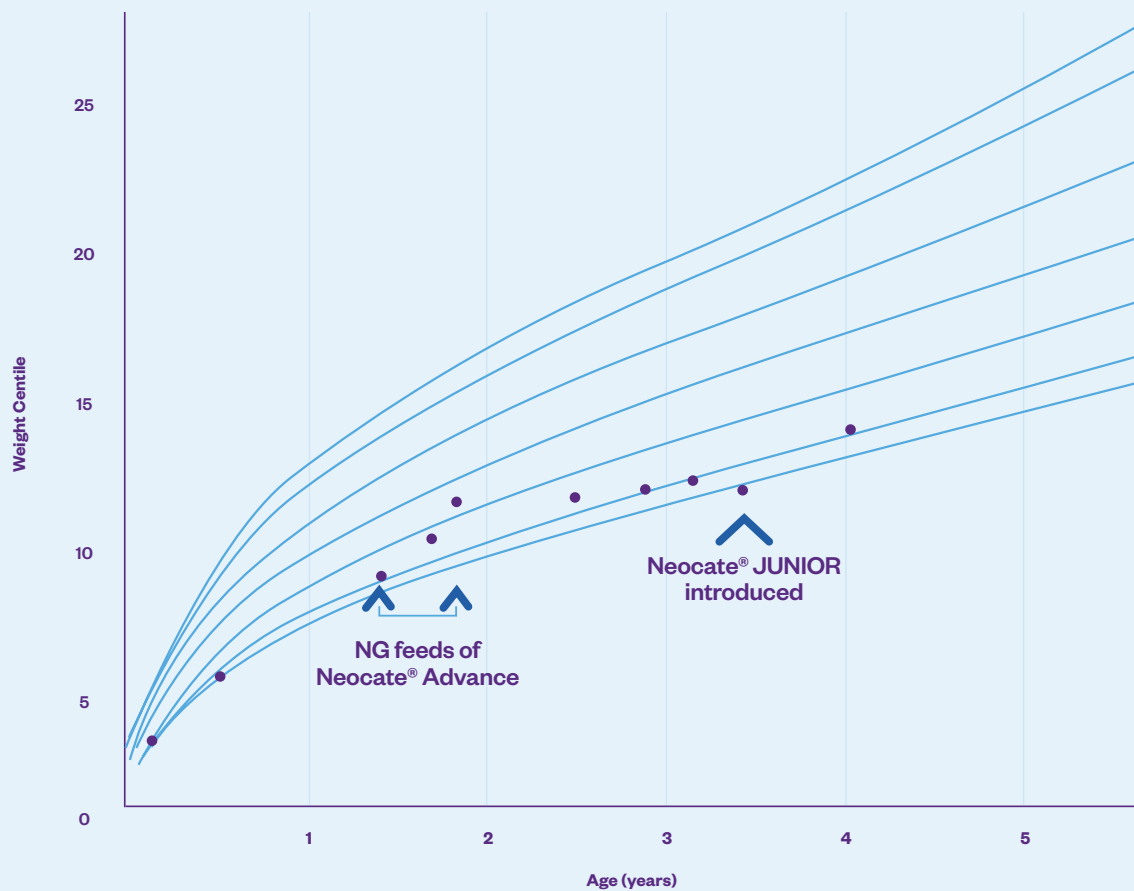
#### Initial management from March 2014 to March 2015

Following diagnosis of EoE at 18-months of age, Frank was commenced on a Six Food Elimination Diet (SFED), with dairy, wheat, soy, egg, fish/shellfish and tree-nuts/peanuts eliminated, followed by stepwise reintroduction until a final diagnosis of EoE caused by cow's milk was established. To ensure age-specific nutritional adequacy and prevent micronutrient deficiencies, the elimination diet was supplemented with nasogastric (NG) tube feeds of a nutritionally complete up-age hypoallergenic formula, Neocate® Advance. From March until September 2014 (i.e. 18-months to 2-years of age), nasogastric feeds of Neocate® Advance were provided to meet estimated protein requirements. Tube feeds were ceased in December when soy had been successfully reintroduced and Frank was drinking fortified soy-based toddler milk. At 2.5 years of age, Frank was on a cow's milk free diet, where milk was replaced by soy-based toddler milk.

#### Review in April 2016

**At 3.5 years of age, Frank's growth rate reduced, with his weight and height no longer tracking as they had (see Figure 1). This suboptimal growth coincided with an increased use of soy products.** Parents refused a repeat endoscopy at this time and eliminated soy products from Frank's diet. **To optimise Frank's diet, 400ml Neocate® JUNIOR was provided as an oral supplement to a dairy and soy free diet.** Following elimination of soy, Frank was symptom free, with normal growth and a nutritionally adequate oral intake. An endoscopy was performed following reintroduction of soy products. The endoscopy again showed longitudinal grooves and visible eosinophilic granulocytes (35 per HPF). Frank is now 4-years of age and on a dairy and soy free diet, supplemented with Neocate® JUNIOR Strawberry.

Figure 1: Growth Chart



## Conclusion

In this case, Neocate® JUNIOR was well tolerated as an oral supplement to an elimination diet for EoE to cow's milk and soy proteins. Neocate® JUNIOR was initiated to restore growth during active disease and continued during remission as a cow's milk/soy substitute, to maintain normal growth and ensure nutritional adequacy of the elimination diet.

### Usage of Neocate® JUNIOR

- ✓ Oral supplement to an elimination diet
- ✓ Prepared at 1kcal/ml
- ✓ Strawberry flavour

### Practical indicators for use of Neocate® JUNIOR

- ✓ Child  $\geq 1$ -year with newly diagnosed eosinophil esophagitis
- ✓ Multiple food allergies
- ✓ Feeding difficulties
- ✓ Faltering growth

# CASE STUDY: GEORGE



## 7-year old boy with multiple food allergies and persistent allergic symptoms

**Ruth Chalmers**  
Paediatric Allergy Dietitian

### Clinical Presentation

George is a 7-year old boy who was referred to the Gastro-Allergy clinic due to multi-system atopic disease.

### Background

George developed eczema at 3-months of age, which became widespread and severe at 5-months. Whilst better controlled, his eczema persists, requiring topical management under dermatology.

George has both IgE and non-IgE mediated food allergies. His IgE mediated allergies to egg and fish were diagnosed at 6-months of age. Subsequently peanut, almond and hazelnut allergies were confirmed however, he has since outgrown these nut allergies.

At around 4-years of age, George started to experience non-IgE symptoms including; bloating, abdominal pain and constipation with soiling. He was diagnosed with non-IgE mediated dairy, soya and wheat allergies.

Despite consuming an allergen free diet, George's gastrointestinal symptoms persisted. Consequently he became a very fussy eater, frequently refusing food and experiencing ongoing fatigue. Nutritional blood tests confirmed dietary inadequacy and ongoing allergic symptoms. Despite dietary compliance, growth was suboptimal, weighing 19.7kg (0.4th centile) and measuring 116.5cm (9-25th centile) (see Figure 1).

**In view of his persisting symptoms, and their negative impact on George and his family's quality of life, George was referred for dietetic input to discuss the dietary options available.**

### Management

**Following dietetic assessment it was agreed to commence George on a 4 food restriction diet (i.e. pork, chicken, rice and apples) with supplementary hypoallergenic feed top ups of Elemental O28 Extra Liquid to support dietary adequacy and growth.**

After 6-weeks, George's symptoms had improved but his weight remained static due to challenges with compliance, taste fatigue and volume consumption. Despite this, food reintroductions commenced. However, eventually the volume of feeds required to promote growth compromised his intake of "safe solids".

**By this time Neocate® JUNIOR had become available and therefore offered George improved palatability, three new flavours, an age appropriate nutrient profile and the potential for concentration to 1.26kcal/ml if need be (i.e. making it easier for George to meet his nutritional requirements in less volume).**

George commenced Neocate® JUNIOR at the lower concentration of 0.69kcal/ml due to ongoing gastrointestinal symptoms. He tolerated Neocate® JUNIOR well. He liked all 3 flavours, consuming the vanilla and strawberry most often, and his mother was successfully cooking with it too. He was drinking more than the prescribed 600ml/day, sometimes managing 1000ml/day, but was also hungry, asking for food and eating more solids.

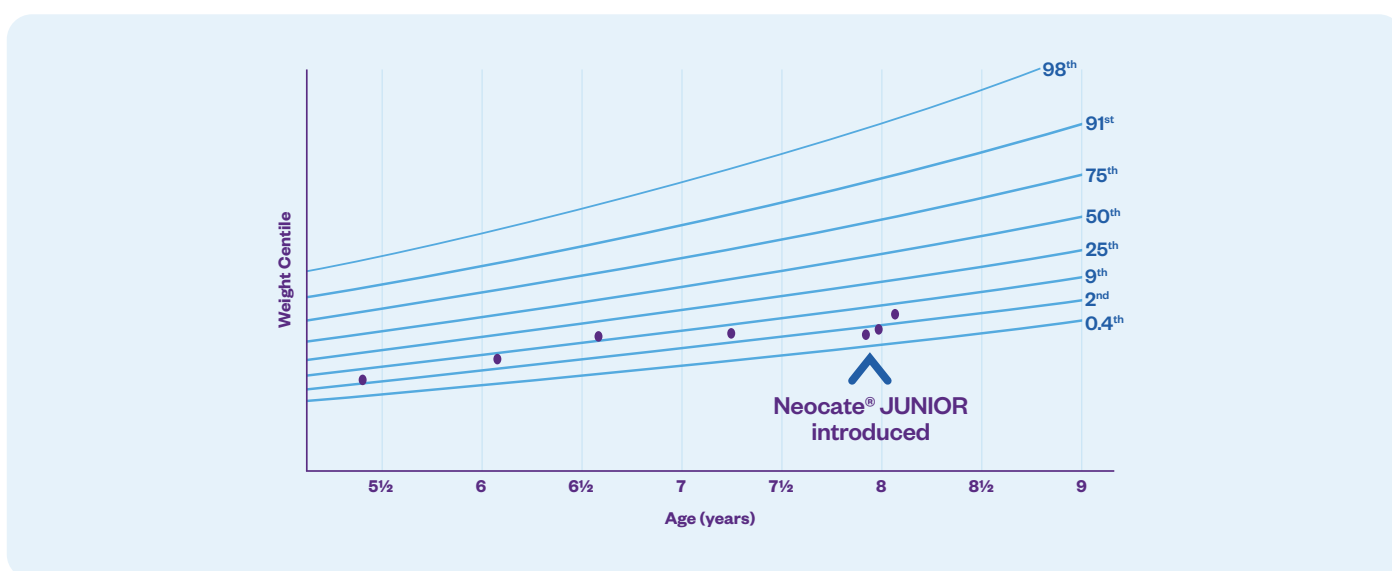
He tolerated the concentration increasing to 1kcal/ml. His bowels were regular, opening every other day with no blood or mucus. He had no upper GI symptoms and less wind than previously. At his 4 week review he had gained 700g in weight and 1.3cm in height, crossing upwards on the centiles for weight and height (see Figure 1). His solid intake was able to continue to be liberalised whilst taking Neocate® JUNIOR to support his nutritional intake.

**Table 1:** Initial dietetic management and management with Neocate® JUNIOR

|                           | Feed              | Regime                                | Concentration | Target Volume Achieved | Supplementary nutrient intake achieved                  |
|---------------------------|-------------------|---------------------------------------|---------------|------------------------|---------------------------------------------------------|
| <b>Initial Assessment</b> | E028 Extra Liquid | 750ml                                 | 0.86kcal/ml   | ⊗*                     | 430kcal<br>12.6g protein<br>226mg calcium<br>4.2mg iron |
| <b>Review 1</b>           | Neocate® JUNIOR   | Introductory regime:<br>600ml per day | 0.69kcal/ml   | ☑                      | 414kcal<br>11.4g protein<br>372mg calcium<br>4.8mg iron |
| <b>Review 2</b>           | Neocate® JUNIOR   | Target regime:<br>600ml per day       | 1kcal/ml      | ☑                      | 600kcal<br>17g protein<br>540mg calcium<br>7.2g iron    |

\*Actual intake – 500ml/day

**Figure 1:** Growth Chart



## Conclusion

This case demonstrates how Neocate® JUNIOR, a palatable amino acid based feed, promoted compliance, weight gain, and was well tolerated, even in an osmotically sensitive individual. The paediatric-friendly flavours prevented flavour fatigue, which is particularly important when giving amino acid based feeds orally, and had previously been a problem for this child. George continues to take Neocate® JUNIOR as a supplement to his diet, allowing further food reintroductions whilst maintaining an adequate nutritional intake and maintaining growth. He continues to tolerate Neocate® JUNIOR and has had psychology support to address his feeding behaviours. This has resulted in significant dietary progress and he now requires reduced volumes of Neocate® JUNIOR.

### Usage of Neocate® JUNIOR

- ☑ Oral supplement to an elimination diet
- ☑ Prepared at 1kcal/ml
- ☑ Unflavoured / neutral, strawberry and vanilla flavour variants

### Practical indicators for use of Neocate® JUNIOR

- ☑ Multiple food allergies
- ☑ Feeding difficulties
- ☑ Faltering growth



# CASE STUDY: MAX



## Exclusively gastrostomy-fed 8-year old boy with a history of poor feed tolerance

**Heather Hill**  
Paediatric Allergy Dietitian

### Clinical Presentation

Max is an 8-year old boy with a diagnosis of Simpson Golabi Behmel syndrome who underwent a bowel resection for an adhesive obstruction in his early years. He was born prematurely at 31 weeks' gestation and a gastrostomy and fundoplication were performed in his first year of life. He is nil by mouth and relies entirely on gastrostomy feeding for nutrition and hydration. **He has been unable to tolerate a whole-protein feed consistently since birth** and has received the Neocate® range of feeds as his main source of nutrition throughout his life. He lives happily at home with his family and attends a school for children with additional needs.

### Background

Growth in the early months of life fluctuated between the 0.4th and 50th centiles. At 4-years his weight was on the 50th centile and by the age of 5-years he had settled around the 25th centile, in line with height growth. Weight gain then plateaued

from the 9th-25th centiles to 2nd-9th centiles at 7-years of age and did not respond to increased energy provision. It was thought that at this time, growth was inhibited by poor nutritional intake secondary to gastrointestinal intolerance.

### Management

Initially, Max had a target intake of Neocate® Advance at 1kcal/ml concentration to meet maximum fluid requirements (5 x 280ml bolus feeds per day) but displayed poor growth, limited tolerance to volume (only achieving 5 x 200ml bolus feeds per day), excessive gas, bloating and inconsistent bowel motions. At times Max was only tolerating approximately 50% of target feed volumes (Table 1). The concentration of Neocate® Advance was increased to 30% weight/volume (1.2kcal/ml) and a modular supplement added to give a final energy yield of 1.3kcal/ml but this was met with intolerance and persistent poor growth. Bloating, gagging and slow gastric emptying resulted in achieving only 50% of the target feeding plan (Table 1).

Dietetic and parental goals for the introduction of Neocate® JUNIOR included improved tolerance to gastrostomy feeds with consequential improved weight gain.

#### Introduction of Neocate® JUNIOR

Neocate® JUNIOR was commenced at a concentration of 1.26kcal/ml but at a suboptimal volume of 5 x 200ml feeds per day given the history of poor feed tolerance. Volumes

were increased in 5ml increments, over several days, up to 5 x 300ml feeds per day in order to meet energy requirements. At a 2-week review, parents reported reduced bloating, more formed stools and had reached the target volume of 5 x 300ml feeds per day more quickly than on Neocate® Advance (Table 1). Max asked to be fed which he had never done previously. Weight gain was achieved over 4-weeks, with catch-up growth across 1-centile (Table 2). Weight gain was sustained at a review 4 months later, which was a pleasing outcome as Max's weight had been static for approximately 12 months prior to initiation of Neocate® JUNIOR (Table 2). Max's parents reported that he used to experience leakage from his gastrostomy site when receiving Neocate® Advance, which has not occurred while using Neocate® JUNIOR and may be linked to improved gastric emptying in this case.

**Table 1:** Feeding regimen

| Feed                                                            | Bolus Feeding Regime | Target Volume | Target Volumes Achieved |
|-----------------------------------------------------------------|----------------------|---------------|-------------------------|
| Neocate® Advance (1kcal/ml)                                     | 5 x 280ml feeds      | 1400ml        | ✗                       |
| Neocate® Advance (1.2kcal/ml) + modular supplement = 1.3kcal/ml | 5 x 280ml feeds      | 1400ml        | ✗                       |
| Neocate® JUNIOR (1.26kcal/ml)                                   | 5 x 200ml feeds*     | 1000ml        | ✓                       |
| Neocate® JUNIOR (1.26kcal/ml)                                   | 5 x 300ml feeds**    | 1500ml        | ✓                       |

\*Neocate® JUNIOR introductory regime

\*\*Neocate® JUNIOR target regime – volumes gradually increased in 5ml increments from introductory regime

**Table 2:** Weight prior and after commencement of Neocate® JUNIOR

|                                              | Weight (kg) | Centile |
|----------------------------------------------|-------------|---------|
| Prior to Neocate® JUNIOR initiation          | 21.2kg      | 2nd     |
| After 4 weeks of Neocate® JUNIOR initiation  | 22.6kg      | 9th     |
| After 4 months of Neocate® JUNIOR initiation | 22.9kg      | 9th     |

## Discussion

Following a prolonged period of difficulties achieving tolerance and growth, Max's parents were excited to try a new feed. They were very satisfied with the results and chose to continue with Neocate® JUNIOR after switching from Neocate® Advance. Max now displays fewer gastrointestinal symptoms and it is hoped that further concentration of Neocate® JUNIOR to promote continued weight gain can be achieved. Growth is now moving in the right direction leaving Max, his parents and his Dietitian all happy.

## Conclusion

Neocate® JUNIOR was well tolerated as a sole source of nutrition for gastrostomy feeding in this patient with a history of poor feed tolerance. Neocate® JUNIOR also resulted in an improvement in growth, which had not been possible to achieve with the previous feed regime.

### Usage of Neocate® JUNIOR

- ✓ Sole source of nutrition
- ✓ Gastrostomy fed patient
- ✓ Prepared at 1.26kcal/ml
- ✓ Unflavoured / neutral flavour variant

### Practical indicators for use of Neocate® JUNIOR

- ✓ Faltering growth
- ✓ Failure to tolerate a whole or extensively hydrolyzed protein feed

# Practical indicators for use of Neocate<sup>®</sup> JUNIOR

Based on clinical features of children managed  
with Neocate<sup>®</sup> JUNIOR

- ✓ Persistent CMA at 1-year of age and on an infant AAF
- ✓ Child ≥1-year with newly diagnosed EGID\*, FPIES\*\*, MFA
- ✓ Multiple food allergies
- ✓ Feeding difficulties
- ✓ Atopic Dermatitis
- ✓ Faltering Growth



\*Eosinophilic Gastrointestinal Disease

\*\*Food Protein Induced Enterocolitis Syndrome

# Supporting you to support your patients

At Nutricia, we believe in the power of nutrition to make a positive and measurable difference to health.

Every day we are inspired by our purpose: to pioneer nutritional discoveries that help people of every age live longer, healthier lives.

For more information about Nutricia and Neocate<sup>®</sup>, as well as finding out more about our mission and nutritional discoveries, please visit: **Nutricia.com**

